

WHAT IS CLAIMED IS:

1. A linear motor, comprising:
a coil; and
a plurality of magnets disposed along a
5 central axis of said coil, wherein magnetization
directions of said plurality of magnets have
different tilts with respect to the central axis.
2. A linear motor according to Claim 1,
10 wherein the magnetization directions of said
plurality of magnets are tilted in opposite
directions with respect to the central axis.
3. A linear motor according to Claim 2,
15 wherein said plurality of magnets are disposed so
that the total sum of the tilts of the
magnetization directions with respect to the
central axis becomes equal to or approximately
equal to zero.
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4. A stage system, comprising:
a linear motor as recited in Claim 1;
and
a stage to be driven by said linear
25 motor.
5. An exposure apparatus, comprising:

a stage system as recited in Claim 4,
for positioning at least one of an original and a
substrate; and

means for exposing the substrate with
5 the original.

6. A device manufacturing method,
comprising the steps of:

preparing an exposure apparatus as
10 recited in Claim 5; and

producing a device by use of the
exposure apparatus.

7. A linear motor, comprising:
15 a coil;
a plurality of first magnet groups
having polar directions disposed in periodically
different directions; and

a plurality of second magnet groups
20 having polar directions disposed in periodically
different directions,

wherein, in a set including a
predetermined magnet of said first magnet groups
and a magnet of said second magnet groups,
25 corresponding to the predetermined magnet,
magnetization directions of the set of magnets
have mutually different tilts with respect to the

central axis of said coil.

8. A linear motor according to Claim 7,
wherein, in a set including a predetermined magnet
5 of said first magnet groups and a magnet of said
second magnet groups, corresponding to the
predetermined magnet, magnetization directions of
the set of magnets are tilted in opposite
directions with respect to the central axis.

10 9. A linear motor according to Claim 8,
wherein, in a set including a predetermined magnet
of said first magnet groups and a magnet of said
second magnet groups, corresponding to the
15 predetermined magnet, the magnets are disposed so
that the total sum of the tilts of the
magnetization directions of the magnets become
equal to or approximately equal to zero.

20 10. A linear motor according to Claim 7,
wherein said coil includes a first coil effective
to produce a Lorentz's force between it and said
first magnet groups, and a second coil effective
to produce a Lorentz's force between it and said
25 second magnet groups.

11. A linear motor according to Claim 10,

further comprising a first yoke provided at a side
of said first coil remote from said first magnet
groups, and a second yoke provided at a side of
said second coil remote from said second magnet
5 groups.

12. A stage system, comprising:
a stage; and
a linear motor including (i) a coil,
10 (ii) a plurality of first magnet groups having
polar directions disposed in periodically
different directions, and (iii) a plurality of
second magnet groups having polar directions
disposed in periodically different directions,
15 wherein, in a set including a
predetermined magnet of said first magnet groups
and a magnet of said second magnet groups,
corresponding to the predetermined magnet,
magnetization directions of the set of magnets
20 have mutually different tilts with respect to the
central axis of said coil.

13. An exposure apparatus for exposing a
substrate with a pattern of an original, said
25 apparatus comprising:
a stage for moving at least one of an
original and a substrate; and

a linear motor for driving said stage,
said linear motor including (i) a coil, (ii) a
plurality of first magnet groups having polar
directions disposed in periodically different
5 directions, and (iii) a plurality of second magnet
groups having polar directions disposed in
periodically different directions,

wherein, in a set including a
predetermined magnet of said first magnet groups
10 and a magnet of said second magnet groups,
corresponding to the predetermined magnet,
magnetization directions of the set of magnets
have mutually different tilts with respect to the
central axis of said coil.

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